L22 ANSWER 1 OF 1 CA COPYRIGHT 2004 ACS on STN
AN 129:291698 CA
TI Manufacture of mixed gases containing carbon monoxide and hydrogen
IN Okamoto, Atsushi; Nakamura, Kenji; Yomeoka, Mikio; Ebata, Shuji; Ikoma, Futoshi
PA Mitsubishi Gas Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10259001	A2	19980929	JP 1997-63146	19970317
PRAI	JP 1997-63146		19970317		

AB Mixed gases containing CO and H are manufactured by decomposition of liquid-phase MeOH in the presence of Cu- and Cr-containing solid **catalysts**. The **catalyst** may contain Mn compds. and/or alkaline earth compds. Alkali **metal** compds. may be contained in the **catalysts** and/or the reaction solns. Me **formate** may be contained in MeOH.

L24 ANSWER 1 OF 8 USPATFULL on STN
AN 2002:280689 USPATFULL
TI Promoted skeletal iron **catalysts** for Fischer-Tropsch synthesis processes
IN Zhou, Peizheng, Lawrenceville, NJ, UNITED STATES
Lu, Yijun, Lawrenceville, NJ, UNITED STATES
PA Hydrocarbon Technologies, Inc. (U.S. corporation)
PI US 2002156137 A1 20021024
AI US 2002-107915 A1 20020327 (10)
RLI Continuation-in-part of Ser. No. US 2001-895621, filed on 2 Jul 2001, PENDING Continuation of Ser. No. US 1999-399852, filed on 21 Sep 1999, GRANTED, Pat. No. US 6277895
DT Utility
FS APPLICATION
LREP Hydrocarbon Technologies, Inc., 1501 New York Avenue, Lawrenceville, NJ, 08648
CLMN Number of Claims: 19
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 547
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Promoted skeletal iron **catalysts** are provided which contain 70-90 wt % iron together with promoters 0-5.0 weight % copper, 0.1-10.0 weight % manganese, and 0.1-3.0 weight % potassium, with the balance being aluminum. The **catalysts** are prepared by mixing the **metal** chips or powders **uniformly** together, then melting and rapidly quenching the molten **metals** to **form** a solid **metal** alloy precursor including the promotor **metals** except potassium, removing most of the aluminum by caustic extraction/leaching to provide a base skeletal iron **form**, then loading the potassium promoter from a suitable potassium alcohol solution promoter. After evaporation of the solvent, the promoted skeletal iron **catalyst** is activated by contact with hydrogen. The promoted skeletal iron **catalysts** are utilized for F-T synthesis processes at 10-30 wt % **catalyst** concentration, 200-350° C. temperature, 1.0-3.0 Mpa pressure and gas hourly space velocity of 0.5-5.0 L/gcat-h to produce desired hydrocarbon liquid products. The promoted skeletal iron **catalysts** provide good catalytic activity and selectivity for hydrogen and CO conversions, for distillate fuel products are attrition resistant synthesis, and are readily separable from waxy liquid product by gravity sedimentation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L24 ANSWER 2 OF 8 USPATFULL on STN
AN 2002:81655 USPATFULL
TI Production of 6-aminocaproic acid
IN Bunel, Emilio E., Wilmington, DE, United States
Koch, Theodore A., Wilmington, DE, United States
Ozer, Ronnie, Arden, DE, United States
Sengupta, Sourav K., Wilmington, DE, United States
PA E.I. du Pont de Nemours and Company, Wilmington, DE, United States (U.S. corporation)
PI US 6372939 B1 20020416
AI US 2000-713143 20001116 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Wilson, James O.; Assistant Examiner: Tucker, Zachary
LREP Deitch, Gerald E.
CLMN Number of Claims: 20
ECL Exemplary Claim: 1

DRWN 0 Drawing Figure(s); 0 Drawing Page(s)
LN.CNT 578
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A process for making 6-aminocaproic acid by **hydroformylating** 3-pentenenitrile to produce 3-, 4-, and 5-**formylvaleronitrile** (FVN mixture), oxidizing the FVN mixture to produce 3-, 4-, and 5-cyanovaleric acid; hydrogenating the resulting product to produce 6-aminocaproic acid, 5-amino-4-methylvaleric acid, and 4-amino-3-ethylbutyric acid; and isolating 6-aminocaproic acid from the reaction product. The resulting 6-aminocaproic acid can be cyclized to produce caprolactam.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L24 ANSWER 3 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 139:247721 CA
TI Promoting Effects of Some **Metal** Additives on the Methanol Synthesis Activity of Sulfided Pd/SiO2 **Catalyst** from Syngas Containing H2S
AU Koizumi, Naoto; Murai, Kazuhito; Tamayama, Seiko; Ozaki, Toshihiko; Yamada, Muneyoshi
CS Department of Applied Chemistry, Graduate School of Engineering, Tohoku University, Sendai, 980-8579, Japan
SO Energy & Fuels (2003), 17(4), 829-835
CODEN: ENFUEM; ISSN: 0887-0624
PB American Chemical Society
DT Journal
LA English
AB A sulfided Pd/SiO2 **catalyst** was doped with various kinds of **metal** additives (M: Li, K, Cs, Mg, Ca, Sr, Ba, Sc, Y, La, Nd, Mn, Zn, or Al) and used for methanol synthesis from CO hydrogenation. The addition of Ca, Y, La, or Nd significantly improved the activity for methanol synthesis, and among these additives, Ca was the most effective additive. Besides, the methanol synthesis activity of the sulfided Pd/SiO2 doped with the Ca additive changed, depending on the preparation method of the precursor. The calcination of the precursor after impregnating with the Pd-containing solution was helpful for improving the methanol synthesis activity.
The most active **catalyst** doped with the Ca additive yielded 720 g kg-cat-1 h-1 of methanol at 593 °K and 5.1 MPa, which was .apprx.50% of the space-time yield of methanol that is obtained with a com. Cu/Zn/Al **catalyst** at 593 °K and 5.1 MPa from a syngas containing CO2. Besides, even in the presence of H2S, the sulfided Pd/SiO2 **catalyst** doped with the Ca additive preserved 35% of the initial activity. The undoped **catalyst** showed a much lower methanol synthesis activity than the doped **catalyst** in the presence of H2S as well. Thus, even in the presence of a small amount of H2S in syngas, the Ca additive shows the promoting effect on increasing the methanol synthesis activity. In contrast with the sulfided **catalysts**, in the presence of H2S, the methanol synthesis activity of the Cu/Zn/Al **catalyst** decreased linearly with time onstream and eventually dropped to zero.
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 4 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 121:258370 CA
TI Catalytic hydrogenation of carbon dioxide and characterization of REY-supported bimetal **catalysts**
AU Yin, Xiaolong; Ji, Yuanyuan; Yin, Lihua; Wang, Changyou; Li, Xianglan; Li, Aixin
CS Dep. Appl. Chem., Taiyuan Univ. Technol., Taiyuan, 030024, Peop. Rep. China
SO Huanjing Kexue (1993), 14(5), 19-23

CODEN: HCKHDV; ISSN: 0250-3301
DT Journal
LA Chinese
AB The REY and ZSM-5 zeolite-supported bimetal **catalysts** for hydrogenation of carbon dioxide were evaluated by autoclave expts. The catalytic properties of the **catalysts** were tested and the activities decreased in the following order: for carbon dioxide methanation: Ru/REY > NiRu/REY > NiPd/REY > NiIr/REY; for synthesis of alcs.: NiCu/REY > Ni/REY > NiMn/REY > NiCo/REY. The conversion of carbon dioxide to methane is ≤76% over the 2% Ru/REY **catalyst** at 473 K, 3.9 MPa, ratio of hydrogen gas/carbon dioxide is 5, in a 20 h run. The influence of reaction conditions on the NiCu/REY indicated that the selectivity for alcs. is high at 443-473 K. The increase of reaction temperature and pressure lowered the selectivity for alcs. and increased the selectivity for methane and carbon monoxide. The polar solvents such as triethylamine promoted the carbon dioxide hydrogenation more effectively than less polar solvents. FT-IR spectra indicated that the intensity of the 1400 and 1437 cm-1 bands of the REY-supported **catalysts** are higher than that of ZSM-5-supported **catalysts**. The peaks at 1400, 1437 and 1636 cm-1 might be assigned to the absorption of NH3 coordinated to the **metal** ion center in the **form** of [Ni(NH3)6]2+ and/or [Ni(NH3)5NO3]+.

L24 ANSWER 5 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 121:178847 CA
TI Quantum chemistry study on the mechanism of CO activation over Cu-based **catalysts** for methanol synthesis
AU Lai, Wujiang
CS Dep. Chem., Xiamen Univ., Xiamen, 361005, Peop. Rep. China
SO Huaxue Wuli Xuebao (1993), 6(4), 306-13
CODEN: HWXUE4; ISSN: 1003-7713
DT Journal
LA Chinese
AB Based on the XPS, ESR and TPD-MS spectroscopies investigations into CO adsorption on Cu-based **catalysts** MnO-Cu/SiO2, both the Cu5 cluster model and the Cu4MnO cluster model for the CO adsorbed on the active center of **catalysts** have been proposed The nature of CO activation on this **catalysts** for methanol synthesis has been studied with the DV-Xα quantum chemical calcns. The calcns. of the total energy of adsorption system show that the CO mol. is linearly bonded to the Cu atom in which the CO is titled with its O atom toward the Mn atom, **forming** an angle of 45° with normal of the Cu-Mn bond. The activation of CO on Cu4MnO cluster is caused through 0.58 electrons transfer from the σ MOs of CO to the Cu and Mn atoms and back-donation of 0.66 electrons from the Cu and Mn to the lowest unfilled CO 2π* orbital. The relevant mechanism is also obtained for CO adsorption on the Cu5 cluster like Fig.1, but the π-back-donation of charge is smaller than CO on Cu4MnO cluster. Moreover, the σ and π overlap populations between the C and O atoms of adsorbed CO on the Cu5 cluster are weaker than that on the Cu4MnO cluster. The calcns. also show that the occupied 2* orbital of the CO-Cu4MnO cluster is primarily **formed** by the mixing of CO 2π* orbital with Cu3d and Mn3d orbitals, the main atomic components are Cu 1.21%, Mn: 79.21%, C: 2.46% and O: 9.81%, i.e., the 2π* orbital of adsorbed CO has some electrons. The above results indicate that the effects of promoter MnO on CO activation improve the ability of **metal** atoms to back donation of electrons into 2π* orbital of adsorbed CO mol.

L24 ANSWER 6 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 108:97169 CA
TI **Catalysts** for steam **reforming** of methanol
IN Mizuno, Koichi; Watanabe, Akira; Takeuchi, Yoshimitsu; Wakijima, Naohisa
PA Agency of Industrial Sciences and Technology, Japan; Kyushu Refractories Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 5
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62250948	A2	19871031	JP 1986-96454	19860424
	JP 05082321	B4	19931118		
PRAI	JP 1986-96454		19860424		

AB The title **catalysts** for manufacturing H, CO, and CO2 from MeOH and H2O, are composed of heat-resistant porous inorg. compds. selected from Al2O3, SiO2, SiO2-Al2O3, cordierite, and/or zeolite, ≥1 **metal** selected from base **metals**, e.g. Ni, Co, Fe, Mn, Mo, Cr, etc. or noble **metals**, e.g., Pd, Pt, Rh, etc. and ≥1 **metal** selected from alkali and alkaline earth **metals**, e.g., Na, K, Mg, Ca, etc. Thus, an aqueous solution containing Ni(NO3)2.6H2O and KNO3 was mixed with Al2O3, dried, and baked at 500°to give a **catalyst**, which was packed in an reactor and activated by MeOH at 250°. Then, 1.0:1.0 mol ratio mixture of H2O and MeOH was passed through the reactor at 350° to give a mixture containing H 70.5, CO 4.7, CO2 20.5, and others 4.3 mol% at 98.4% MeOH conversion, vs., 7.3, 2.3, 2.4, 88.0, and 94.0, resp., using a similar **catalyst** without K.

L24 ANSWER 7 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 104:9959 CA
TI **Catalysts** for methanol decomposition - effect of potassium nitrate addition
AU Zhou, Zexing; Mizuno, Koichi; Suzuki, Masatomi
CS Inst. Environ. Chem., Acad. Sin., Beijing, Peop. Rep. China
SO Huanjing Huaxue (1985), 4(4), 28-32
CODEN: HUHUDB; ISSN: 0254-6108
DT Journal
LA Chinese
AB H2 and CO are the main reaction products (>95%) of MeOH [**67-56-1**] at 350° on a **catalyst** containing K, M, and Al2O3, or K, Rh, M, and Al2O3 (where M is a base **metal** other than K). When K was not contained in the **catalyst**, the main reaction product was H2O. **Catalysts** containing K are therefore useful in the treatment of exhaust gas containing MeOH.

L24 ANSWER 8 OF 8 CA COPYRIGHT 2004 ACS on STN
AN 97:215288 CA
TI Conversion of methanol over **metal** ion exchanged **forms** of fluorotetrasilicic mica
AU Morikawa, Yutaka; Goto, Tadatoshi; Moro-Oka, Yoshihiko; Ikawa, Tsuneo
CS Res. Lab. Res. Util., Tokyo Inst. Technol., Yokohama, 227, Japan
SO Chemistry Letters (1982), (10), 1667-70
CODEN: CMLTAG; ISSN: 0366-7022
DT Journal
LA English
AB The catalytic activities of **metal** ion exchanged **forms** of fluorotetrasilicic mica (**metal**-TSM) were tested for the conversion of methanol. Although Na- and H-TSM have no activities, some **metal**-TSM's show characteristic activities. Ti-TSM exclusively catalyzes the dehydration reaction like an acid **catalyst**. Cu-TSM dehydrogenates MeOH to produce HCO2Me selectively. The mechanism of the activity was discussed.

L30 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
AN 1989:156523 CAPLUS
DN 110:156523
TI Process for synthesis of esters from gaseous reactants containing organic hydroxy compounds and mixtures of hydrogen and carbon monoxide
IN Attig, Thomas G.; Graham, Anne M.; Pesa, Frederick A.
PA Standard Oil Co., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4790963	A	19881213	US 1984-642406	19840820
PRAI	US 1984-642406		19840820		

AB The title process with high selectivity involves the reaction in the presence of a Ru-Cu-containing **catalyst** complex MaAbRuCucNzOx (M = Ce, Cr, Fe, Mn, or their mixts.; A = alkali, alkaline earth metal, or their mixts.; a = 0-1, b = 0.002-10, c = 0.2-20, z = 0-196, x = number of O). Thus, 3:7:0.5 mol CO-H-MeOH mixture was passed (3300 h-1) through a reactor containing 5% Na0.3RuCuOx/95% Alundum at 350°, producing esters with 16.6% selectivity.

=> d his

(FILE 'HOME' ENTERED AT 12:44:28 ON 16 MAR 2004)

FILE 'REGISTRY' ENTERED AT 12:45:07 ON 16 MAR 2004
L1 1 S METHANOL/CN
L2 1 S COPPER/CN
L3 1 S MANGANESE/CN
L4 1 S RHENIUM/CN
L5 1 S CARBON MONOXIDE/CN
L6 1 S HYDROGEN/CN

FILE 'CAPLUS, USPATFULL, CA' ENTERED AT 12:46:25 ON 16 MAR 2004
L7 8536 S L1 AND L2
L8 980 S L7 AND L3
L9 215 S L8 AND L5
L10 215 S L9 AND L9
L11 96 S L9 AND L6
L12 71 S L11 AND ?FORM?
L13 57 S L12 AND CATALYST
L14 30 S L13 AND METAL
L15 19 DUP REM L14 (11 DUPLICATES REMOVED)
L16 0 S L15 AND FORMIC ESTER
L17 4 S L15 AND ESTER
L18 15 S L15 NOT L17
L19 4 S L18 AND SYN? GAS
L20 11 S L14 NOT L15
L21 0 S L20 AND FORMIC ESTER
L22 1 S L20 AND FORMATE
L23 9 DUP REM L20 (2 DUPLICATES REMOVED)
L24 8 S L23 NOT L22
L25 87 S L8 AND L4
L26 64 S L25 AND CATALYST
L27 8 S L26 AND SYN? GAS
L28 7 S L27 NOT L15
L29 6 S L28 NOT L14
L30 2 DUP REM L29 (4 DUPLICATES REMOVED)